



**TRANE**<sup>®</sup>

# Installation Owner Diagnostics

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## **Vertical Stack Water-Source Heat Pump Model GETB**



### **Models**

**"A" and later Design Sequence**

### **GETB**

009-036 — 60 HZ  
009-036 — 50 HZ

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**February 2006**

**WSHP-SVN08B-EN**



# Notice

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**NOTICE:**

Warnings and Cautions appear at appropriate sections throughout this manual. Read these carefully.



**WARNING – Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**



**CAUTION – Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.**

**CAUTION – Indicates a situation that may result in equipment or property-damage-only accidents.**

**Important!**

Equipment is shipped FOB (Free on Board) at the manufacturer. Therefore, freight claims for damages against the carrier must be initiated by the receiver.

**NOTICE:**

Unit contains HCFC (R-22) Refrigerant

Instructions!

Section 608, Paragraph C of the 1990 Clean Air Act states:

Effective July 1, 1992, it shall be unlawful for any person, in course of maintaining, servicing, repairing, or disposing of an air conditioning system, to knowingly vent or release any CFC or HCFC refrigerant. Minimal releases (air purges or refrigerant hoses) associated with good faith attempts to recapture or recycle are exempt from the ban on venting.

**Responsible Refrigerant Practices!**

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified. The Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

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# Pre-installation Checklist

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## **WARNING** **Fiberglass Wool!**

**Product contains fiberglass wool. Disturbing the insulation in this product during installation, maintenance or repair will expose you to airborne particles of glass wool fibers and ceramic fibers known to the state of California to cause cancer through inhalation. Glass wool fibers may also cause respiratory, skin or eye irritation.**

### **Jobsite Inspection**

Always perform the following checks before accepting a unit:

1. Verify that the nameplate data matches the data on the sales order and bill of lading (including electrical data).
2. Verify that the power supply complies with the unit nameplate specifications.
3. Visually inspect the exterior of the unit, for signs of shipping damage. *Do not sign the bill of lading accepting the unit(s) until inspection has been completed. Check for damage promptly after the unit(s) are unloaded. Once the bill of lading is signed at the jobsite, the unit(s) are now the property of the SOLD TO party and future freight claims MAY NOT be accepted by the freight company.*
4. Verify that the refrigerant charge has been retained during shipment by use of gauges. Schrader taps are located external to the cabinet on the 2-ton through 6-ton equipment.
5. After assuring that charge has been retained, reinstall the schrader caps to assure that refrigerant leakage does not occur.

## **CAUTION** **Microbial Growth!**

**Wet interior unit insulation can become an amplification site for microbial growth (mold), which may cause odors and damage to the equipment and building materials. If there is evidence of microbial growth (mold) on the interior insulation, the insulation should be removed and replaced prior to operating the system.**

### **Jobsite Storage**

This unit is intended for indoor use only. To protect the unit from damage due to the elements, and to prevent possible IAQ contaminant sources from growing, the unit should be stored indoors. If indoor storage is not possible, the following provisions for outdoor storage must be met:

1. Place the unit(s) on a dry surface or raise above the ground to assure adequate air circulation beneath the unit.
2. Cover the unit(s) with a water proof tarp to protect them from the elements.
3. Make provisions for continuous venting of the covered units to prevent moisture from standing on the unit(s) surfaces. Wet interior unit insulation can become an amplification site for microbial growth (mold) which has been determined to be a cause of odors and serious health related indoor air quality problems.
4. Store refrigeration units (chassis) units in the normal UP orientation to maintain oil in the compressor. Cabinet configurations may be stored as crated.
5. Do not stack units.

# General Information

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## Unit Nameplate

The unit nameplate is located at the front of the unit. It includes the unit model number, serial number, electrical characteristics, refrigerant charge, and other pertinent unit data.

## Compressor Nameplate

The nameplate for the compressors are located on the compressor shell.

## Unit Description

Before shipment, each unit is leak tested, dehydrated, charged with refrigerant and run tested for proper control operation.

## Water-to-Refrigerant Coils

The co-axial water-to-refrigerant heat exchanger for the 3/4-ton through 3-ton equipment is constructed of copper or cupro-nickel (option) for the water section and stainless steel for the refrigeration section.

The heat exchanger is leak tested to assure there is no cross leakage between the water and refrigerant gas.

## Water Connections

1/2" or 3/4" water connections are located on the chassis's upper section and clearly labeled for water-in/out hose to riser hook-up.

## Blower/Motor

The blower and motor is located inside the unit cabinet. The blower and motor may be removed from the cabinet through the chassis opening. After removing the chassis, the blower assembly is strapped into the unit cabinet through a single metal, flexible bracket. We refer to this bracket as a housing belly bracket. After detaching one screw at the bottom/front edge of the bracket, the housing and motor are free to be lifted from the fan deck.

## Sound Attenuation

Sound attenuation is applied as a standard feature in the product design. The enhanced reduction package includes a heavy gage base plate, and gasket/insulation around the compressor enclosure.

An optional deluxe sound reduction package is also available. It includes a heavy gage base plate, gasket and insulation around the compressor enclosure, and vibration isolation between the chassis and cabinet. An additional dampening treatment is applied around the compressor enclosure to achieve greater acoustical reductions.

## Controls

The *control system* offered to control the unit is a Basic 24 volt control for the 3/4-ton through 2-ton retrofit (WPRD) equipment. A 50 VA transformer is factory supplied on this unit configuration. See wiring diagram on chassis access panel for field wiring connection to the 24 volt mechanical thermostat.

## Deluxe 24V Controls

*(GET model)*

Units containing the Deluxe 24V control design will incorporate a micro-processor-based control board. The Trane microprocessor board is factory wired to a terminal strip to provide all necessary terminals for field connection. The deluxe board is equipped with a random start relay, anti-short cycle timer, brown out protection, compressor disable, unit safety control, diagnostics and a generic relay (which may be available for field use). See page 16 for diagnostic information.

Power wiring is made at the contactor. The wiring is fed through the left or right conduit tube, and into the cabinet's control box (contactor).

## ZN510 Controls

*(GET option)*

Units incorporating the ZN510 control option design will include a digital LonTalk™ certified control board. The control board will support such options as: random start delay, heating/cooling status, occupied/unoccupied mode and fan/filter status.

Power wiring is made at the contactor. The wiring is fed through the left or right conduit tube, and into the cabinet's control box (contactor). See manual WSHP-IOP-2 for diagnostic information.

## Schrader Connections

Connections for the low and high side of the refrigeration system are located conveniently on the chassis' top beneath a sheet metal plate.

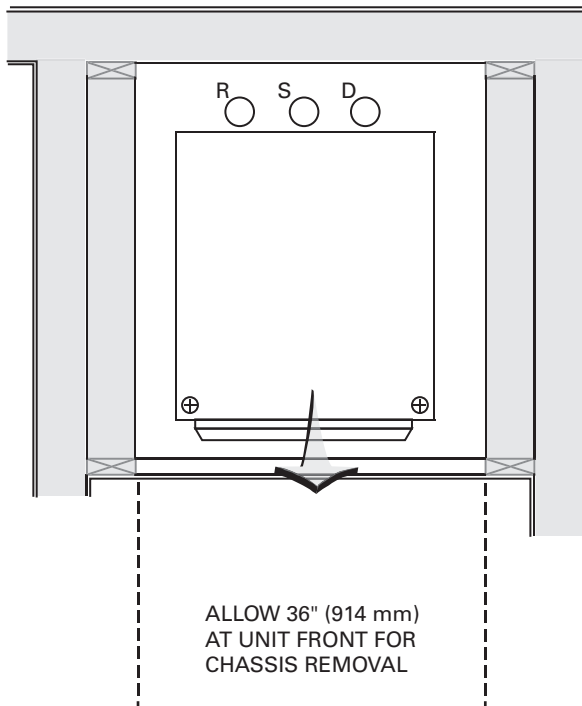
# Dimensions/Weights/ Clearance

**Table 1: Unit weights**

Size	Shipping Weight with pallet (lb)	Shipping Weight w/o pallet (lb)
<b>Cabinet</b>		
009	135	115
012	135	115
015	175	150
018	175	150
024	225	195
036	225	195
<b>Chassis</b>		
009	90	80
012	95	85
015	110	100
018	115	105
024	190	180
036	200	190

## **WARNING** **Improper Unit Lift!**

**Test lift unit approximately 24 inches to verify proper center of gravity lift point. To avoid dropping of unit, reposition lifting point if unit is not level. Failure to properly lift unit could result in death or serious injury or possible equipment or property-only damage.**



*Figure 1: Mechanical clearances*

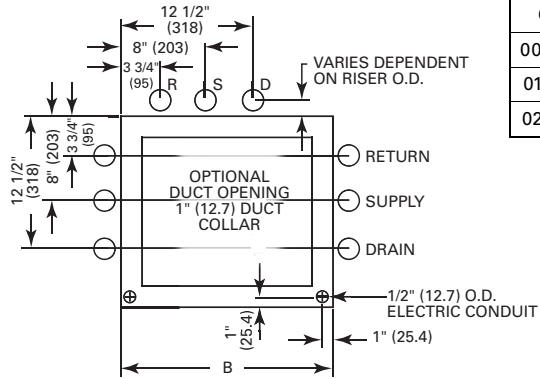
### **Unit Location and Clearances**

Locate the unit in an indoor area. The ambient temperature surrounding the unit must not be less than 45°F. Do not locate the unit in areas subject to freezing.

Attention should be given to service clearance and technician safety. The unit chassis should be easily removed from the cabinet in all applications. There must be enough space for service personnel to perform maintenance or repair. Provide sufficient room to make water, and electrical connection(s). Local and national codes should be followed in providing electrical power connections. See *Figure 1* for mechanical clearances.

# Dimensions

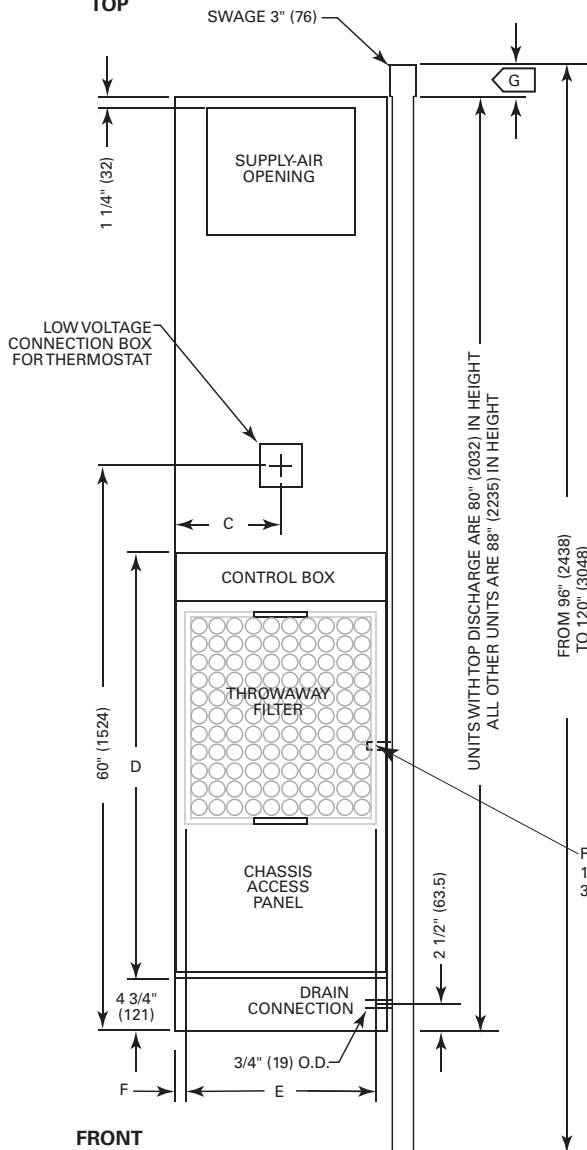
## GET 009-036



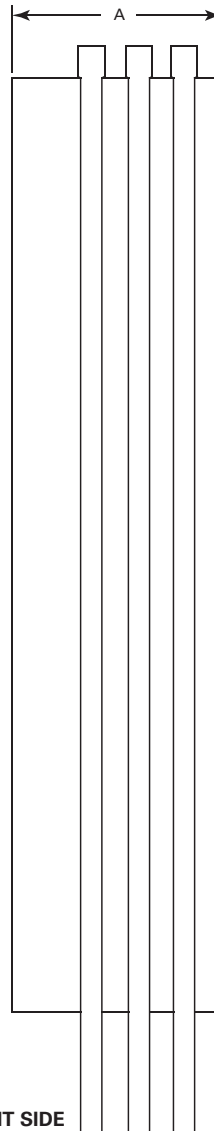
GET	A	B	C	D	E	F
009, 012	16 1/4" (413)	16 1/4" (413)	8 1/8" (206)	39 1/8" (994)	14 3/4" (375)	3/4" (19)
015-018	18" (457)	20" (508)	10" (254)	40 5/8" (1032)	18 3/4" (476)	3/4" (19)
024-036	24" (610)	24" (610)	12" (305)	49 5/8" (1260)	22 5/8" (575)	3/4" (19)

- G 11" (279) FOR 80" (2032) CABINET HEIGHT  
3" (76) FOR 88" (2235) CABINET HEIGHT
- H SUPPLY-AIR OPENINGS AND RISER LOCATIONS CANNOT BE ON THE SAME SIDE OF THE UNIT.
- J RISER LOCATION CAN BE ON ANY SIDE EXCEPT FRONT, AND MAY BE SUPPLIED BY TRANE OR BY OTHERS.

TOP



FRONT



RIGHT SIDE

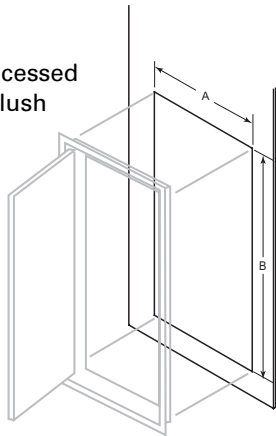
# Dimensions

## Hinged Acoustical Door

### Return Air (hinged) Acoustical Door

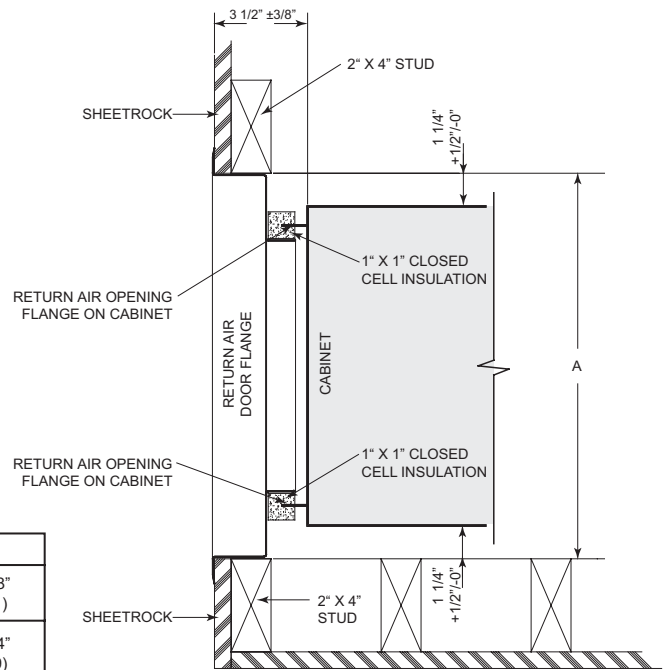
The hinged acoustical door is recessed into the wall so that the door is flush with the surface of the wall.

The opening through the wall for the door assembly must be centered with the return-air opening of the unit cabinet. For full installing instructions of the return-air acoustical door, see page 12.



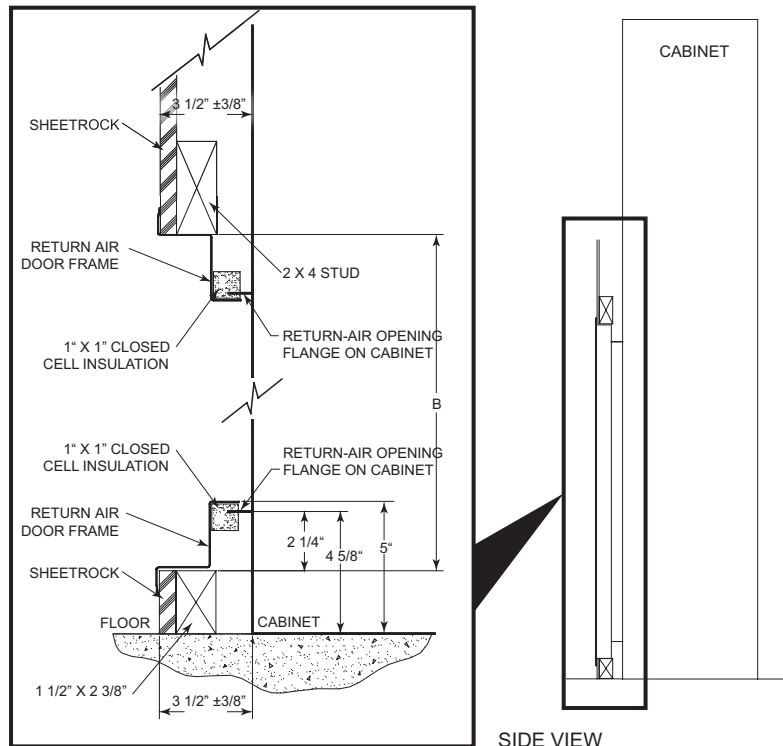
SHEET ROCK  
OPENING

Unit Size	A	B
09 012	19 1/4" (489)	44 1/8" (1121)
015 018	23 1/4" (591)	45 1/4" (1149)
024 036	27 1/8" (689)	54 5/8" (1387)



Note:  
Finished wall and framing should not touch the unit cabinetry.

TOP VIEW





# Installation

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## General Installation Checks

The checklist below is a summary of the steps required to successfully install a unit. This checklist is intended to acquaint the installing personnel with procedures required in the installation process. It does not replace the detailed instructions called out in the applicable sections of this manual.

- 1 Remove packaging and inspect the unit. Check the unit for shipping damage and material shortage; file a freight claim and notify appropriate sales representation.

*Note: The unit cabinet is packaged in a wooden crate. A pry bar and/or hammer will be needed for packaging removal.*

*The chassis sits inside a cardboard tray with an upper box for protection. Typically four chassis will be shrink-wrapped to a single pallet.*

- 2 Verify the correct model, options and voltage from the unit nameplate.
- 3 Verify the installation location of the unit will provide the required clearance for proper operation.
- 4 Remove refrigeration access panel and inspect the unit. Be certain the refrigerant tubing has clearance from adjacent parts.

## **WARNING** **Hazardous Voltage!**

**Disconnect all electric power, including remote disconnects and discharge all motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.**

### Main Electrical

- 5 Verify the power supply complies with the unit nameplate specifications.
- 6 Inspect all control panel components; tighten any loose connections.
- 7 Connect properly sized and protected power supply wiring to a field-supplied/installed disconnect switch and to the unit power block (1TB1) in the unit's cabinet control box for equipment.
- 8 Install proper grounding wires to an earth ground.

*Note: All field-installed wiring must comply with NEC and applicable local codes.*

### Low Voltage Wiring (AC & DC) Requirements

- 9 Connect properly sized control wiring to the proper termination points between the field supplied thermostat and the terminal plug in the equipment's junction box.

# Installation

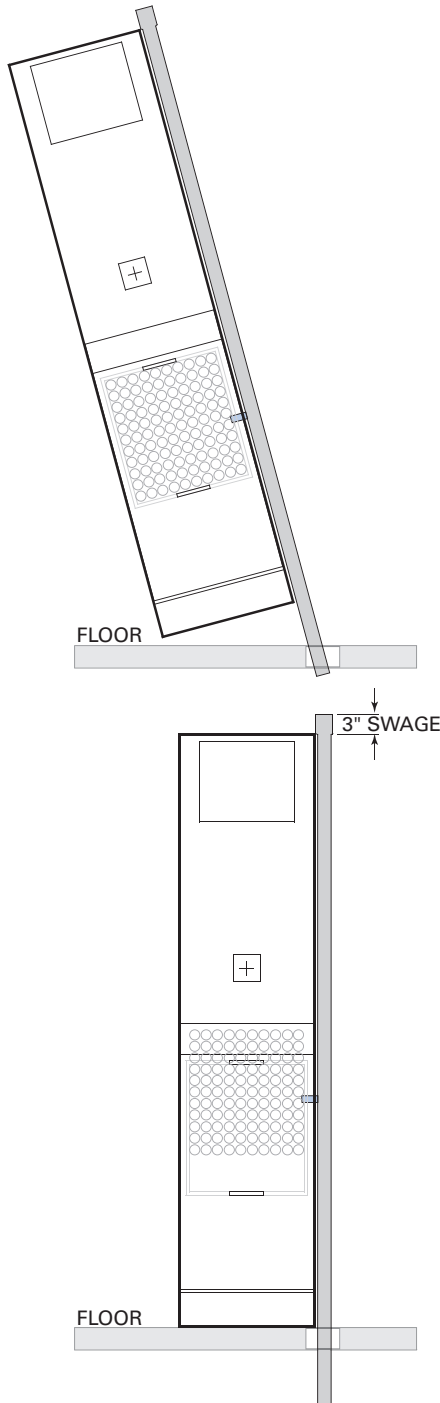


Figure 2: Stacking illustration

## **! WARNING** Improper Unit Lift!

**Test lift unit approximately 24 inches to verify proper center of gravity lift point. To avoid dropping of unit, reposition lifting point if unit is not level. Failure to properly lift unit could result in death or serious injury or possible equipment or property-only damage.**

### Unit Placement

If unit cabinet assembly includes *factory provided risers*, and "no" field provided between-the-floor riser extensions, please move to Step 1.

*Note: Risers are designed to accommodate a maximum of 1 1/2" to 3" expansion and contraction. If the total calculated riser expansion exceeds 3", expansion devices must be field provided.*

If unit cabinet assembly includes factory provided risers and field provided between-the-floor riser extensions are required, install the extensions before installing the cabinet.

- 1 Install drain valve, shut-off/balancing valves, flow indicators and drain at the base of each supply and return riser to enable system flushing at start-up, balancing and service/maintenance.
- 2 Lift cabinet into space while aligning it into the 3" swage of the riser below.

*Note: Take extra care as not to scrape or dent risers during positioning. The riser should fall approximately 2" into the 3" swage. This will allow for the variation in floor-to-floor dimensions, and keep the riser joints from bottoming out.*

- 3 Level the cabinet.
- 4 Plumb risers in two planes to assure proper unit operation and condensate drainage.
- 5 Anchor all units into place.
- 6 For field provided risers, center the supply/return stubouts into the unit

expansion slots. The stubouts should be perpendicular to the cabinet panel.

- 7 Verify all risers are vertical and that they penetrate the swaged joint at least 1". Riser should not be allowed to bottom out.
- 8 Braze riser joints. Soft solder or low-temperature alloys should not be used in this application.
- 9 If risers are field provided, it is recommended that the risers be anchored to the building structure with a minimum of one contact point. For expansion and contraction reasons, do not fasten risers rigidly to the building.
- 10 Seal access holes made through the cabinet for piping with suitable material to help eliminate air leakage.
- 11 See page 14 for system flushing.

### Water Connection

For vibration isolation, it is recommended that flexible steel braided hoses be installed instead of hard piping between the vertical risers and the unit chassis.

Trane offers 4-types of hose kit variations:

- Stainless steel braided flexible hose with manual shut-off (ball) valves
- Stainless steel braided flexible hose with manual deluxe shut-off (ball) valves
- Stainless steel braided flexible hose with manual circuit-setter valve
- Stainless steel braided flexible hose with automatic balancing valve

Additional accessories, such as a strainer are recommended for use to eliminate contaminants from entering the co-axial water-to-refrigerant heat exchangers.

# Installation

## Field Installed Power Wiring

Power wiring to the equipment must conform to National and Local Electric Codes (NEC) by a professional electrician.

## **⚠ WARNING** Live Electrical Components!

**During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.**

Verify that the power supply available is compatible with the unit's nameplate. Use only copper conductors to connect the power supply to the unit.

## **CAUTION** Use Copper Conductors Only!

**Unit terminals are not designed to accept other types of conductors. Failure to use copper conductors may result in equipment damage.**

## Main Unit Power Wiring

A field supplied disconnect switch must be installed at or near the unit in accordance with the National Electric Code (NEC latest edition).

Location of the applicable electric service entrance for HIGH (line voltage) may be found in *Figure 3*.

- 1 Route power wire to the cabinet control box through the factory installed conduit at the top of the unit cabinetry.

The high voltage connection is made at the 1PB1 power block in the cabinet control box. Refer to the customer connection diagram that is shipped with the unit for specific termination points.

Provide proper grounding for the unit in accordance with the local and national codes.

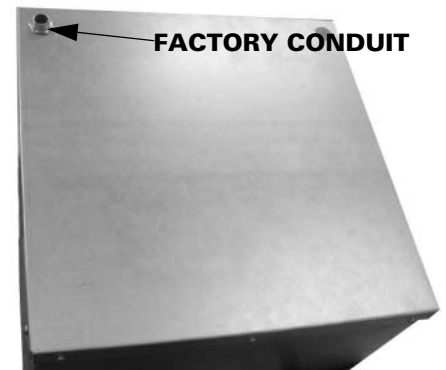
## Control Power Transformer

The 24-volt control power transformers are to be used only with the accessories called out in this manual. Transformers rated greater than 50 VA are equipped with internal circuit breakers. If a circuit breaker trips, turn OFF all power to the unit before attempting to reset it.

## **⚠ WARNING** Hazardous Voltage!

**Disconnect all electric power, including remote disconnects and discharge motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.**

The transformer is located in the chassis control box.



*Figure 3: Power wire entrance*

# Installation

## Drywall Installation

Before installing drywall around cabinet. Cover the cabinet supply and return openings with plastic or cardboard to help prevent dust or construction debris from reaching unit components. Warranties will be voided if paint or foreign debris is allowed to contaminate internal unit components.

The location of the drywall may be dependent upon the type of return air access design.

- Units that contain a **field provided** return air access assembly, contractor must calculate location of drywall to allow for frame mounting.

## Units utilizing Hinged Acoustic Door Assembly.

- Locate the side studs a minimum of 1 1/4-inches and a maximum of 1 3/8-inches from the cabinet to the side of the stud. This critical dimension, combined with "distance between studs" is used to determine the side-to-side opening for the door, *dimension A*. The distances provided in the table are a "minimum" dimension. Allow 3 1/2-inches from the front of the cabinet to the sheet rock surface, *Figure 4 - Top View. Figure 5, mock-up of stud placement.*

- The height of the door assembly must be positioned to recess the door 2 1/4-inches from the cabinet's return-air opening, *Figure 4 - Side View blow-up.*

- Locate dimensions A and B for sheet rock opening size. The position of the sheet rock opening must be centered side-to-side with the return-air opening in the cabinet. Ensure the bottom of the sheet rock opening is 2 1/4-inches below the return-air opening in the cabinet. This allows the door recess to rest on the bottom of the sheet rock opening for proper vertical placement of the door.

- Place the door frame into the sheet rock opening. A positive seal is critical between the back of the door frame and the front of the cabinet. Ensure that the gasket material seals properly. *Note: When placing the sheet rock panel, make certain the opening for the door is centered with the return-air opening in the cabinet ( $\pm 1/8"$ ).*

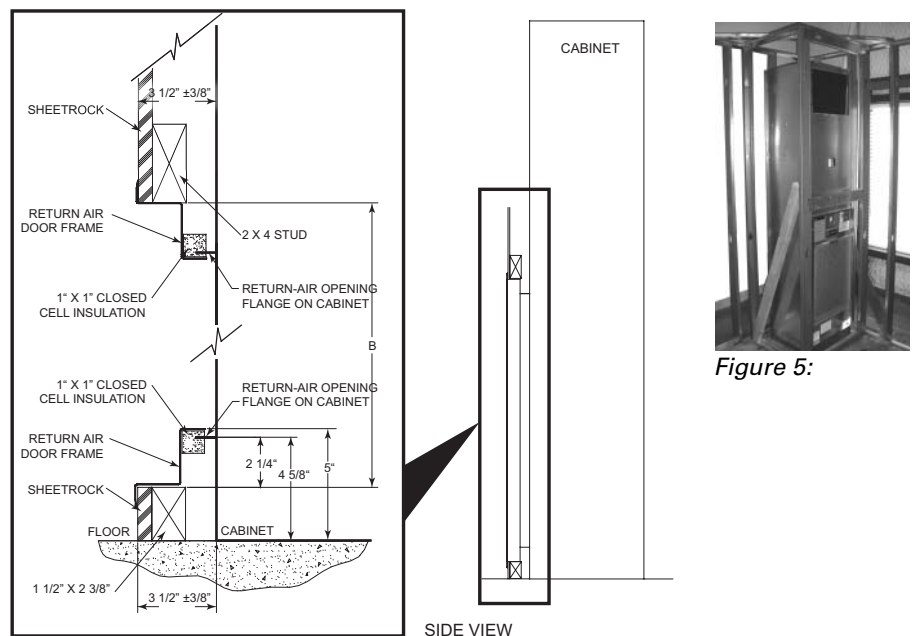
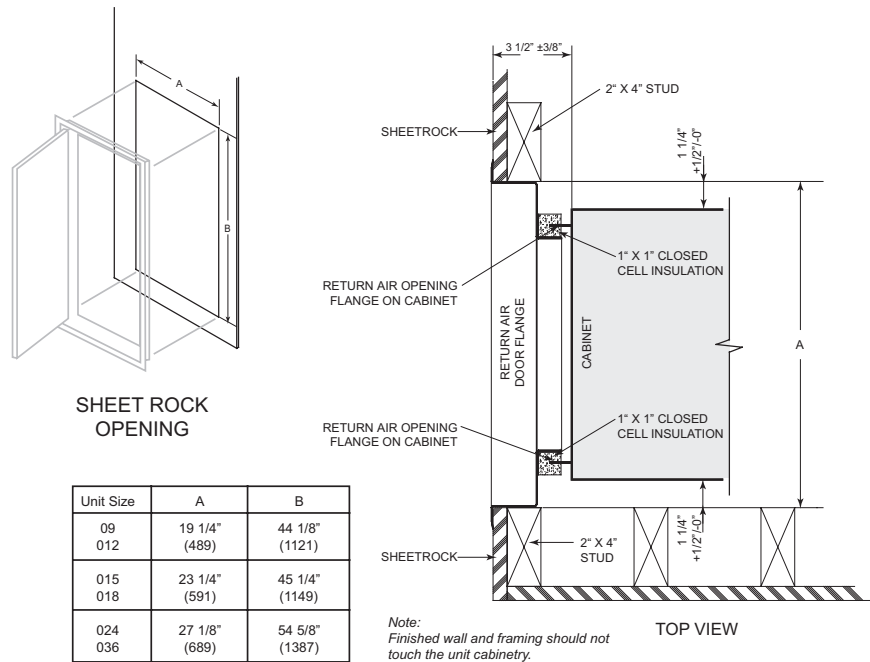


Figure 4: Drywall installation for hinged acoustic door

# Installation

- 1 Secure the door frame to the side studs using the holes located in the door frame and field provided screws, *Figure 6*.



*Figure 6: Door opening*

*Note: If the gap between the door frame, and the side stud is over 1/16-inch, place a shim in between the door frame and the stud to prevent the door frame from bending/denting.*

- 2 Place the air panel into the door opening. The gasket on the back side of the air panel should seal around the coil perimeter, *Figure 7*.



*Figure 7: Air panel gasket*

- 3 After verifying that the air panel gasket is sealed to the coil, secure the air panel to the door frame using the slots located on the sides of the air panel, *Figure 8*.



*Figure 8: Secure to door frame*

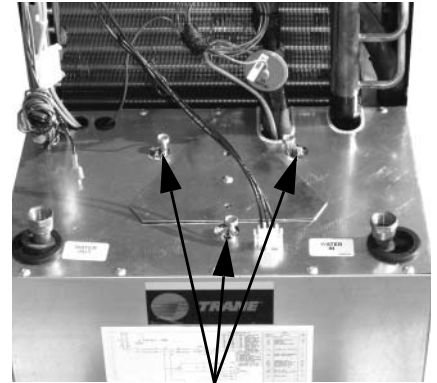
- 4 Install Filter.
- 5 Vacuum all dust and construction debris from unit after cutting out supply/return openings.

### Supply Air Ductwork

- 1 A 2" (50.8 mm) duct flange (field provided) may be required to help eliminate supply air from recirculating back into the return air, air-to-refrigerant coil prior to discharging into the space.
- 2 Equipment containing a top discharge, ducted design: install field ductwork to the unit providing a water tight flexible connector at the unit. This helps prevent operating sounds from transmitting through the ductwork. Elbows with turning vanes or splitters are recommended to minimize air noise due to turbulence and to help reduce static pressure.

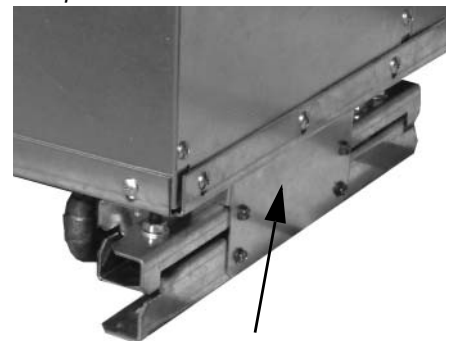
### Chassis Installation

- 1 Remove three 16-inch bolts on the chassis and discard, *Figure 9*.



*Figure 9: Shipping bolts*

- 2 Rotate the triangular metal plate to cover the bolt holes in the chassis. Secure with two sheet metal screws.
- 3 Remove two shipping brackets (one on each side) attached to the chassis slide rails and discard, *Figure 10*. *Note: Remove this bracket only if the enhanced sound package design is preferred.*



*Figure 10: Bracket removal for enhanced sound package*

- 4 Connect water coil pipe to the system riser with a flexible steel hose assembly.
- 5 Verify that the shut-off/balancing valve in the return line/supply line are closed.
- 6 Place shut-off valves in appropriate location (see sticker on the equipment for best placement recommendation) to allow chassis to slide easily in/out of unit cabinetry.

# Installation

## **⚠ WARNING** **Live Electrical Components!**

**During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.**

- 7 Flush system. See *Cleaning and Flushing the Water Loop* for flushing instructions.
- 8 Open the unit water valves and check piping for leaks.
- 9 Connect electrical to unit chassis via the quick connect mating plugs.

*Note: Four plugs are included (motor, optional condensate overflow, power and thermostat).*

- 10 Slide chassis into the cabinet. Center the chassis left to right to minimize sound transmission. See *Figure 11*.



*Figure 11: Install chassis centered*

- 11 Verify unit's air filter is properly place in the chassis filter rack.
- 12 Install cabinet's front cover to the hinged door.

### IMPORTANT

Ensure the gasket material creates a positive seal around the entire coil to avoid coil bypass.

If a field supplied door is used, ensure the front cover is attached to the building structure and not the unit cabinet.

### Supply Grille installation

See *Table 2* for supply air dimensions.

- 1 Install the supply grille(s) into the cabinet discharge opening. Insure there are no air gaps between the cabinet supply air and the grille. This helps prevent recirculation of supply air into the return air opening behind the drywall.
- 2 Secure grille(s) into the drywall via two screws.

### Cleaning and Flushing the Water Loop

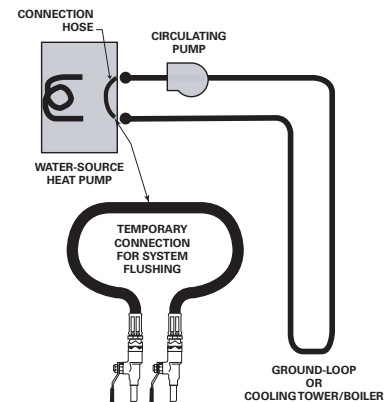
After the piping system is complete, the flexible hose connectors should be doubled back to complete the water circuit external to the unit (avoiding trash settle-out in the condenser). An extra pipe may be necessary to connect the hose kits. See *Page 15* for antifreeze/water mixture by volume.

- 3 Water circulation system should be filled with clean water using the water make up connections. *Note: Air vents should be opened during filling.*
- 4 With the air vents closed, start the circulating pump and then crack the air vents to bleed off the trapped air, assuring circulation through all components of the system.

*Note: Make up water must be available to the system to replace the volume formerly occupied by the air that is bled off.*

- 5 With the air vented and the water circulating, the entire system should be checked for leaks with repairs made as required.
- 6 Operate the supplementary heat system making checks per manufacturer's instructions. During this operation, visual checks should be made for leaks that may have occurred due to increased heat. Repair as required.
- 7 Open the system at the lowest point for the initial blow down (making sure the make up water is equal to the water being dumped). Continue blow down until the water leaving the drain runs clear, but not less than 2 hours.
- 8 Shut down pumps and supplementary heat system. Reconnect the hoses placing the water-to-refrigerant heat exchanger in the water circulating system.

*Note: Vents should be open when the pumps and supplementary heat system are shut down.*



*Figure 12: Flushing the water loop*

**Table 2: Supply air opening size**

GET Model	Single Grille 100% CFM	Two Grille 50% CFM	Three Grille 33% CFM	Top Discharge Up to 100% CFM
009, 012	12W x 10H (305 x 254)	10W x 6H (254 x 152)	Not Recommended	14 x 10 (356 x 254)
015, 018, 024	14W x 12H (356 x 305)	14W x 12H (356 x 305)	12W x 8H (305 x 203)	16 x 14 (406 x 356)
036	Not Recommended	16W x 14H (406 x 356)	14W x 12H (356 x 305)	17 x 17 (432 x 432)

# Installation

## Using Antifreeze

In areas of the country where entering water temperatures drop below 45°F or where piping is being run through areas subject to freezing, the loop must be freeze protected by using an approved antifreeze solution to prevent the earth loop water from freezing inside the heat exchanger.

Methanol and glycols are the most commonly used antifreeze solutions. Consult your geothermal unit supplier for locally approved solutions in your area.

Propylene glycol is not recommended in installations where the water temperature are expected to fall below 30°F. At extreme temperatures, the viscosity increases to the point where normal loop circulating pumps may not maintain proper flow.

If propylene glycol is the only locally approved solution for anti-freeze, good engineering practices should be used to achieve the desired flow.

Calculate the approximate volume of water in the system by using the requirements detailed in *Table 8, Water Volume*. Add three gallons to this total to allow for the water contained in the hose kit and geothermal unit.

**Table 3: Antifreeze requirements based on volume**

Type of Antifreeze	Minimum Temperature for Freeze Protection				
	10°F	15°F	20°F	25°F	30°F
<b>Methanol</b>	25%	21%	16%	10%	3%
<b>Propylene Glycol</b>	-	-	-	-	6%

# Installation

## Low Voltage Wiring

### Low Voltage Wiring

Factory ordered thermostats and zone sensors are pre-wired with a quick connecting plug.

- 1 After installing the cabinet assembly, simply plug the male portion of thermostat/zone sensor plug into the female portion of the plug located inside the unit's junction box.
- 2 Mount the thermostat or zone sensor on the finished drywall.

Thermostat/zone sensor connection is shown in *Figure 13*.

### Low Voltage Wiring for Field Provided Thermostats/Zone Sensors

Ensure that the AC control wiring between the controls and the unit's termination point does not exceed three (3) ohms/conductor for the length of the run.

*Note: Resistance in excess of 3-ohms per conductor may cause component failure due to insufficient AC voltage supply.*

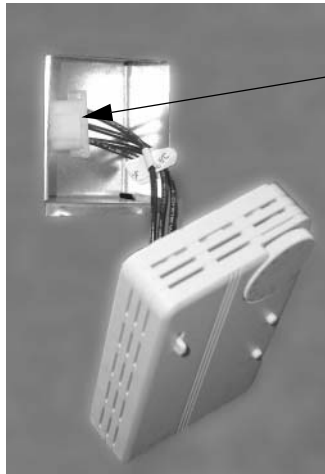
Check all loads and conductors for grounds, shorts, and mis-wiring.

Use copper conductors unless otherwise specified.

Do not run the AC low voltage wiring in the same conduit with the high voltage power wiring.

### Table 4: 24V AC conductors

Distance from unit to Control	Recommended Wire Size
000-460 feet	18 gauge
461-732 feet	16 gauge
733-1000 feet	14 gauge



Factory provided plug

### Six (6) Pin Connector/Harness

Red = 24V  
 Black = Fan  
 Orange = RV  
 Yellow = Compressor  
 Blue = Common

*Figure 13: Zone sensor connection*

**Table 5: Deluxe controller diagnostic LEDs**

Color: Green LED1	Color: Red		Controller Mode
	LED2	LED3	
OFF	OFF	OFF	Control OFF
ON	OFF	OFF	Normal/Compressor OFF
ON	OFF	FLASH	Anti-short Cycle
ON	OFF	ON	Normal/Compressor ON
FLASH	ON	OFF	Brownout Condition
ON	FLASH	ON	Soft Lockout (low pressure)
ON	FLASH	FLASH	Soft Lockout (high pressure)
ON	ON	ON	Manual Lockout (low pressure)
ON	ON	FLASH	Manual Lockout (high pressure)
ON	FLASH	OFF	Manual Lockout (condensate overflow)
ON	ON	OFF	Compressor Disable



# Installation

## Air Flow Adjustment

### Blower Motor Speed Retrofit

Motors installed in the unit have multiple speed configurations. To modify the rpm of the motor, the following steps may be followed.

- 1 Locate the blower motor relay inside the chassis control box.
- 2 Remove the undesired speed tap.
- 3 Select desired speed tap wire by using information from Table 7.
- 4 Connect desired tap wire to the 1K4 relay at spade 4.
- 5 Reconnect power to the unit.

## WARNING

### Hazardous Voltage!

Disconnect all electric power, including remote disconnects and discharge motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

**Table 6: Lead change**

Lead Colors		
Lead Speed	High	Low
Blower	1G	9A

**Table F1: Blower External Static Pressure** without Return Air Door (RAD), with filter

Model No.	Speed Tap	Ducted	Min CFM	Max CFM	External Static Pressure (in. of wg)															
					0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	
GET009	High	Yes	280	482	-	456	422	383	347	308	-	-	-	-	-	-	-	-	-	
GET009	Low	Yes	-	-	-	341	329	309	283	-	-	-	-	-	-	-	-	-	-	
GET009	High	No	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET009	Low	No	-	-	285	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET012	High	Yes	380	481	-	-	-	481	458	435	411	385	-	-	-	-	-	-	-	
GET012	Low	Yes	-	-	-	442	422	404	384	-	-	-	-	-	-	-	-	-	-	
GET012	High	No	-	-	492	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET012	Low	No	-	-	402	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET015	High	Yes	475	652	-	-	-	-	-	652	631	611	584	561	535	503	467	429	689	
GET015	Low	Yes	-	-	-	582	566	551	535	519	505	486	-	-	-	-	-	-	-	
GET015	High	No	-	-	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET015	Low	No	-	-	485	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET018	High	Yes	570	800	-	-	-	-	-	-	-	799	772	747	723	693	664	632	603	
GET018	Low	Yes	-	-	-	648	642	628	613	596	580	-	-	-	-	-	-	-	-	
GET018	High	No	-	-	713	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET018	Low	No	-	-	552	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET024	High	Yes	760	974	-	-	-	-	974	954	927	905	877	846	824	790	-	-	-	
GET024	Low	Yes	-	-	-	878	853	836	814	793	773	-	-	-	-	-	-	-	-	
GET024	High	No	-	-	987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET024	Low	No	-	-	807	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET036	High	Yes	1135	1344	-	-	-	-	-	-	-	-	-	-	-	1344	1313	1282	1255	1219
GET036	Low	Yes	-	-	-	1271	1263	1253	1238	1230	1213	1196	1178	1155	-	-	-	-	-	
GET036	High	No	-	-	1324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET036	Low	No	-	-	1229	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

- 1 The NO "Ducted" option is for non-ducted (free return) units.
- 2 Units specified as "non-ducted" (free return) are factory wired to low-speed.
- 3 Units specified as "ducted" are factory wired to high-speed.



# Electrical Requirements

**Table F2: Blower External Static Pressure with Return Air Door (RAD), with filter**

Model No.	Speed Tap	Ducted	Min CFM	Max CFM	External Static Pressure (in. of wg)															
					0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	
GET009	High	Yes	280	482	-	451	417	378	342	303	-	-	-	-	-	-	-	-	-	
GET009	Low	Yes	-	-	-	336	324	304	278	-	-	-	-	-	-	-	-	-	-	
GET009	High	No	-	-	345	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET009	Low	No	-	-	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET012	High	Yes	380	481	-	-	-	459	436	413	389	363	-	-	-	-	-	-	-	
GET012	Low	Yes	-	-	-	420	400	382	362	-	-	-	-	-	-	-	-	-	-	
GET012	High	No	-	-	470	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET012	Low	No	-	-	380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET015	High	Yes	475	652	-	-	-	-	-	642	621	601	574	551	525	493	457	419	679	
GET015	Low	Yes	-	-	-	572	556	541	525	509	495	476	-	-	-	-	-	-	-	
GET015	High	No	-	-	575	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET015	Low	No	-	-	475	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET018	High	Yes	570	800	-	-	-	-	-	-	-	774	747	722	698	668	639	607	578	
GET018	Low	Yes	-	-	-	623	617	603	588	571	555	-	-	-	-	-	-	-	-	
GET018	High	No	-	-	690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET018	Low	No	-	-	524	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET024	High	Yes	760	974	-	-	-	-	927	907	880	858	830	799	777	743	-	-	-	
GET024	Low	Yes	-	-	-	831	806	789	767	746	726	-	-	-	-	-	-	-	-	
GET024	High	No	-	-	940	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET024	Low	No	-	-	760	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GET036	High	Yes	1135	1344	-	-	-	-	-	-	-	-	-	-	-	1250	1219	1188	1161	1125
GET036	Low	Yes	-	-	-	1177	1169	1159	1144	1136	1119	1102	1084	1061	-	-	-	-	-	-
GET036	High	No	-	-	1280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GET036	Low	No	-	-	1140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- 1 The NO "Ducted" option is for non-ducted (free return) units.
- 2 Units specified as "non-ducted" (free return) are factory wired to low-speed.
- 3 Units specified as "ducted" are factory wired to high-speed.

**Table E1: Electrical Performance**

Model No.	Oversized Blower	Volts	Total FLA	Comp. RLA	Comp. LRA	Blower Motor FLA	Blower Motor HP	Minimum Circuit Ampacity	Overcurrent Protective Device
GET009	No	208/60/1	4.0	3.4	22.2	0.6	1/10	4.9	15
GET009	No	220-240/50/1	3.6	3.1	18.8	0.5	1/10	4.4	15
GET009	No	230/60/1	4.0	3.4	22.2	0.6	1/10	4.9	15
GET009	No	265/60/1	3.6	3.1	18.8	0.5	1/10	4.4	15
GET012	No	208/60/1	5.7	5.0	27.9	0.7	1/8	6.9	15
GET012	No	220-240/50/1	4.9	4.3	22.2	0.6	1/8	6.0	15
GET012	No	230/60/1	5.7	5.0	27.9	0.7	1/8	6.9	15
GET012	No	265/60/1	4.9	4.3	22.2	0.6	1/8	6.0	15
GET015	No	208/60/1	6.1	5.4	29.0	0.7	1/8	7.5	15
GET015	No	220-240/50/1	5.4	4.8	27.0	0.6	1/8	6.6	15
GET015	No	230/60/1	6.1	5.4	29.0	0.7	1/8	7.5	15
GET015	No	265/60/1	5.4	4.8	27.0	0.6	1/8	6.6	15
GET018	No	208/60/1	9.3	7.6	45.0	1.7	1/5	11.2	15
GET018	No	220-240/50/1	7.4	6.3	32.0	1.1	1/5	9.0	15
GET018	No	230/60/1	9.3	7.6	45.0	1.7	1/5	11.2	15
GET018	No	265/60/1	7.4	6.3	32.0	1.1	1/5	9.0	15
GET024	No	208/60/1	13.1	10.9	56.0	2.2	1/5	15.8	25
GET024	No	220-240/50/1	11.7	9.9	55.0	1.8	1/5	14.2	20
GET024	No	230/60/1	13.1	10.9	56.0	2.2	1/5	15.8	25
GET024	No	265/60/1	11.7	9.9	55.0	1.8	1/5	14.2	20
GET036	No	208/60/1	19.3	16.0	82.0	3.3	1/2	23.3	35
GET036	No	220-240/50/1	16.4	13.6	64.0	2.8	1/2	19.8	30
GET036	No	230/60/1	19.3	16.0	82.0	3.3	1/2	23.3	35
GET036	No	265/60/1	16.4	13.6	64.0	2.8	1/2	19.8	30



# Pre-Start Checklist

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## Pre-Start-up Checklist

Before energizing the unit, the following system devices must be checked:

- Is the high voltage power supply correct and in accordance with the nameplate ratings?
- Is the field wiring and circuit protection the correct size?
- Is the low voltage control circuit wiring correct per the unit wiring diagram?
- Is the piping system clean/complete and correct? *(A recommendation of all system flushing of debris from the water-to-refrigerant heat exchanger, along with air purging from the water-to-refrigerant heat exchanger be done in accordance with the Closed-Loop/Ground Source Heat Pump Systems Installation Guide).*
- Is vibration isolation provided? (i.e. unit isolation pad, hose kits)
- Is unit serviceable? *(See clearance specifications on page 6).*
- Are the low/high-side pressure temperature caps secure and in place?
- Are all the unit access panels secure and in place?
- Is the thermostat in the OFF position?
- Is the water flow established and circulating through all the units?
- Is the duct work (if required) correctly sized, run, taped, insulated and weather proofed with proper unit arrangement?
- Is the condensate line properly sized, run, trapped and pitched?
- Does the indoor blower turn freely without rubbing?
- Has all work been done in accordance with applicable local and national codes?
- Has heat transfer fluid been added in the proper mix to prevent freezing in closed system application?
- Are the compressor bolts removed from the chassis?
- Have the chassis isolation rails been released?
- Is there a good seal between the front air panel and the coil?



# Sequence of Operation

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## Initial Unit Start-up

### Start-up with deluxe controls is included below:

Note: Start-up for the Tracer™ ZN510 controller may be found in WSHP-IOP-2.

### **WARNING** **Live Electrical Components!**

**During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.**

1. Set the thermostat to the highest position.
2. Set the thermostat system switch to COOL with the fan control to AUTO. *The compressor should NOT run.*
3. Reduce the temperature control setting until the compressor, reversing valve, solenoid valve, and loop pump are energized. *Adjust water flow utilizing pressure/temperature plugs and comparing to tables contained in specification sheet data. Water leaving the heat exchanger should be warmer than the entering water temperature (approximately 9°F-12°F); blower operation should be smooth; compressor and blower amps should be within data plate ratings; the suction line should be cool with no frost observed in the refrigerant circuit.*
4. Check the cooling refrigerant pressures against values in Table OP1. (Page 21).
5. Turn the thermostat switch to the OFF position. *Unit should stop running and the reversing valve should de-energize.*
6. Leave unit off for approximately FIVE minutes to allow for pressure equalization.
7. Turn the thermostat to the lowest setting.
8. Set the thermostat system switch to the HEAT position.
9. Adjust the temperature setting upward until the unit is energized. *Warm air should blow from the register. A water temperature decrease of approximately 5°F-9°F leaving the heat exchanger should be noted. The blower and compressor operation should be smooth with no frost observed in the refrigeration circuit.*
10. Check the heating refrigerant pressures against values in Table OP1. (Page 21)
11. Set the thermostat to maintain the desired space temperature.
12. Instruct the owner on system operation.



# Operating Pressures

**Table OP-1: Operating Pressures**

GENERAL: There are many variables (airflow, air temperatures) in an air conditioning system that will affect operating refrigerant pressures and temperatures. The chart below shows approximate conditions and is based on air flow at the rated SCFM, entering air at 80.6 °FDB, 66.2 °FWB in cooling, 68 °FDB in heating. (+)Heating data with 35 °F EWT is based on the use of an anti-freeze solution having a freezing point 20 °F lower than the minimum expected entering temperature.

Operating Data										
Model	Entering Water Temp, °F	Water Flow GPM	Cooling				Heating			
			Suction Pressure, PSIG	Discharge Pressure, PSIG	Water Temp Rise, °F	Air Temp Drop, °FDB	Suction Pressure, PSIG	Discharge Pressure, PSIG	Water Temp Drop, °F	Air Temp Rise, °FDB
GET 009	35	1.8					46 - 52	158 - 201	5 - 6	11 - 15
GET 009	35	2.25					46 - 53	159 - 203	4 - 5	12 - 15
GET 009	45	1.8	68 - 78	100 - 127	11 - 14	11 - 15	55 - 63	171 - 218	6 - 7	13 - 17
GET 009	45	2.25	68 - 78	97 - 123	9 - 11	12 - 15	56 - 65	172 - 219	5 - 6	14 - 18
GET 009	55	1.8	70 - 80	117 - 148	11 - 14	11 - 14	65 - 75	182 - 231	7 - 9	15 - 19
GET 009	55	2.25	70 - 80	113 - 144	9 - 11	12 - 15	66 - 76	183 - 233	6 - 7	16 - 20
GET 009	68	1.8	73 - 84	142 - 180	10 - 13	11 - 14	78 - 90	193 - 246	8 - 10	18 - 22
GET 009	68	2.25	73 - 84	138 - 176	9 - 11	12 - 15	79 - 91	195 - 248	7 - 9	18 - 23
GET 009	75	1.8	75 - 86	157 - 199	10 - 13	11 - 14	85 - 98	201 - 256	9 - 11	19 - 24
GET 009	75	2.25	74 - 86	153 - 195	8 - 11	11 - 15	87 - 100	202 - 257	7 - 9	19 - 25
GET 009	86	1.8	77 - 88	183 - 233	10 - 13	11 - 14	96 - 110	208 - 265	10 - 13	21 - 26
GET 009	86	2.25	76 - 88	179 - 227	8 - 11	11 - 15	98 - 113	209 - 266	8 - 10	21 - 27
GET 009	95	1.8	78 - 90	206 - 262	10 - 13	11 - 14				
GET 009	95	2.25	78 - 90	202 - 257	8 - 10	11 - 14				
GET 012	35	2.5					44 - 50	160 - 204	5 - 6	19 - 24
GET 012	35	3.1					45 - 51	162 - 206	4 - 5	19 - 24
GET 012	45	2.5	68 - 78	106 - 135	10 - 13	18 - 23	54 - 62	170 - 217	5 - 7	21 - 27
GET 012	45	3.1	67 - 77	102 - 130	9 - 11	19 - 24	55 - 63	172 - 219	4 - 6	22 - 27
GET 012	55	2.5	72 - 83	124 - 158	10 - 13	18 - 23	64 - 74	181 - 230	6 - 8	24 - 31
GET 012	55	3.1	71 - 82	120 - 153	9 - 11	18 - 23	65 - 75	182 - 232	5 - 7	25 - 31
GET 012	68	2.5	74 - 86	152 - 193	10 - 13	17 - 22	75 - 86	192 - 245	7 - 9	27 - 35
GET 012	68	3.1	74 - 85	147 - 187	8 - 11	18 - 23	76 - 87	194 - 247	6 - 8	28 - 36
GET 012	75	2.5	76 - 87	168 - 213	10 - 13	17 - 21	79 - 90	196 - 250	8 - 10	29 - 37
GET 012	75	3.1	75 - 86	163 - 207	8 - 10	17 - 22	79 - 91	198 - 252	6 - 8	29 - 37
GET 012	86	2.5	77 - 89	195 - 248	10 - 12	16 - 20	84 - 96	203 - 258	8 - 11	30 - 39
GET 012	86	3.1	77 - 88	190 - 242	8 - 10	16 - 21	85 - 97	204 - 260	7 - 9	31 - 39
GET 012	95	2.5	79 - 91	219 - 279	9 - 12	15 - 19				
GET 012	95	3.1	78 - 90	214 - 273	8 - 10	15 - 19				
GET 015	35	2.8					42 - 49	161 - 204	5 - 7	16 - 20
GET 015	35	3.5					44 - 51	163 - 208	4 - 6	16 - 20
GET 015	45	2.8	71 - 81	100 - 127	12 - 15	16 - 20	51 - 59	171 - 217	6 - 8	18 - 23
GET 015	45	3.5	71 - 81	97 - 124	10 - 12	16 - 21	53 - 61	174 - 221	5 - 7	19 - 24
GET 015	55	2.8	73 - 84	116 - 147	12 - 15	16 - 20	61 - 70	181 - 231	8 - 10	21 - 26
GET 015	55	3.5	73 - 84	112 - 143	10 - 12	16 - 20	63 - 72	184 - 234	6 - 8	21 - 27
GET 015	68	2.8	75 - 86	141 - 179	12 - 15	15 - 20	75 - 87	195 - 249	9 - 12	24 - 31
GET 015	68	3.5	74 - 86	137 - 174	10 - 12	16 - 20	77 - 89	198 - 252	7 - 9	25 - 31
GET 015	75	2.8	75 - 86	156 - 199	12 - 15	15 - 19	83 - 95	203 - 258	10 - 13	26 - 33
GET 015	75	3.5	75 - 86	152 - 194	10 - 12	15 - 19	84 - 97	205 - 261	8 - 10	26 - 34
GET 015	86	2.8	76 - 87	184 - 234	12 - 15	14 - 18	92 - 106	211 - 269	11 - 14	28 - 36
GET 015	86	3.5	76 - 87	179 - 228	9 - 12	15 - 19	94 - 108	214 - 272	9 - 12	29 - 37
GET 015	95	2.8	77 - 88	208 - 265	11 - 14	14 - 18				
GET 015	95	3.5	77 - 88	203 - 258	9 - 12	14 - 18				



# Operating Pressure

**Table OP-1: Operating Pressures**

Model	Entering Water Temp, °F	Water Flow GPM	Operating Data							
			Cooling				Heating			
			Suction Pressure, PSIG	Discharge Pressure, PSIG	Water Temp Rise, °F	Air Temp Drop, °FDB	Suction Pressure, PSIG	Discharge Pressure, PSIG	Water Temp Drop, °F	Air Temp Rise, °FDB
GET 018	35	3.6					41 - 47	164 - 209	5 - 6	16 - 20
GET 018	35	4.5					42 - 49	166 - 211	4 - 5	16 - 21
GET 018	45	3.6	69 - 79	110 - 139	12 - 15	17 - 21	50 - 58	174 - 222	6 - 7	18 - 23
GET 018	45	4.5	68 - 78	106 - 134	9 - 12	17 - 22	52 - 60	176 - 224	5 - 6	18 - 23
GET 018	55	3.6	71 - 82	128 - 163	12 - 15	16 - 21	60 - 69	184 - 235	7 - 8	20 - 26
GET 018	55	4.5	71 - 81	123 - 157	9 - 12	17 - 21	62 - 71	186 - 237	5 - 7	21 - 26
GET 018	68	3.6	73 - 84	155 - 198	11 - 15	16 - 20	73 - 84	198 - 252	8 - 10	23 - 30
GET 018	68	4.5	73 - 84	151 - 192	9 - 12	16 - 21	75 - 86	200 - 254	6 - 8	24 - 30
GET 018	75	3.6	74 - 86	172 - 219	11 - 14	16 - 20	80 - 92	205 - 260	8 - 11	25 - 32
GET 018	75	4.5	74 - 85	167 - 212	9 - 12	16 - 20	82 - 94	207 - 263	7 - 9	25 - 32
GET 018	86	3.6	76 - 87	201 - 256	11 - 14	15 - 19	90 - 103	215 - 274	9 - 12	27 - 34
GET 018	86	4.5	76 - 87	195 - 249	9 - 12	15 - 19	92 - 106	217 - 277	8 - 10	28 - 35
GET 018	95	3.6	77 - 89	227 - 289	11 - 14	14 - 18				
GET 018	95	4.5	77 - 88	221 - 281	9 - 11	15 - 19				
GET 024	35	4.8					41 - 48	163 - 207	5 - 7	18 - 22
GET 024	35	6.0					42 - 49	164 - 209	4 - 6	18 - 23
GET 024	45	4.8	64 - 74	108 - 138	12 - 16	17 - 22	51 - 58	175 - 223	6 - 8	21 - 26
GET 024	45	6.0	63 - 73	104 - 133	10 - 13	17 - 22	52 - 59	177 - 225	5 - 7	21 - 27
GET 024	55	4.8	67 - 78	125 - 159	12 - 16	17 - 22	59 - 68	187 - 238	7 - 10	24 - 30
GET 024	55	6.0	67 - 77	121 - 154	10 - 13	17 - 22	61 - 70	189 - 240	6 - 8	24 - 31
GET 024	68	4.8	71 - 82	151 - 193	12 - 16	16 - 21	70 - 81	202 - 257	9 - 11	27 - 34
GET 024	68	6.0	70 - 81	147 - 187	10 - 13	17 - 21	72 - 82	204 - 259	7 - 9	28 - 35
GET 024	75	4.8	72 - 83	167 - 213	12 - 15	16 - 20	75 - 87	209 - 266	9 - 12	29 - 37
GET 024	75	6.0	72 - 83	162 - 207	10 - 12	16 - 21	77 - 89	211 - 269	8 - 10	29 - 37
GET 024	86	4.8	75 - 86	195 - 249	12 - 15	15 - 20	83 - 96	220 - 280	10 - 13	31 - 39
GET 024	86	6.0	74 - 85	190 - 241	10 - 12	16 - 20	85 - 98	222 - 283	8 - 11	32 - 40
GET 024	95	4.8	76 - 88	221 - 281	11 - 15	15 - 19				
GET 024	95	6	76 - 88	215 - 273	9 - 12	15 - 19				
GET 036	35	7.2					40 - 46	155 - 198	4 - 6	17 - 22
GET 036	35	9.0					41 - 48	157 - 200	4 - 5	17 - 22
GET 036	45	7.2	63 - 72	113 - 144	12 - 15	20 - 26	49 - 57	167 - 212	6 - 7	20 - 26
GET 036	45	9.0	61 - 71	109 - 139	9 - 12	20 - 26	51 - 58	168 - 214	5 - 6	21 - 26
GET 036	55	7.2	67 - 77	129 - 164	12 - 15	20 - 26	58 - 67	177 - 226	7 - 9	23 - 30
GET 036	55	9.0	66 - 76	124 - 158	10 - 12	20 - 26	59 - 68	179 - 228	5 - 7	24 - 30
GET 036	68	7.2	71 - 82	155 - 197	12 - 15	20 - 25	71 - 82	192 - 244	8 - 10	27 - 35
GET 036	68	9.0	71 - 82	149 - 189	9 - 12	20 - 25	72 - 83	194 - 246	7 - 8	28 - 35
GET 036	75	7.2	73 - 84	170 - 217	11 - 15	19 - 24	78 - 89	200 - 254	9 - 11	29 - 37
GET 036	75	9.0	73 - 84	164 - 209	9 - 12	19 - 25	79 - 91	202 - 257	7 - 9	29 - 37
GET 036	86	7.2	75 - 86	198 - 252	11 - 14	18 - 23	82 - 94	206 - 263	9 - 12	30 - 39
GET 036	86	9.0	75 - 86	191 - 243	9 - 11	19 - 24	83 - 95	208 - 265	7 - 9	31 - 39
GET 036	95	7.2	76 - 88	224 - 285	11 - 14	18 - 23				
GET 036	95	9	76 - 87	216 - 275	9 - 11	18 - 23				

# Operating Pressures

## Water Pressure Drop

Table 7 should be used to define feet of head/pressure drop. *Note: To calculate feet of head, when using gauges that read in PSIG, multiply PSI by 2.31.*

**Table 7: Water pressure drops (WPD) in feet of head**

Unit Size	GPM	Cooling		Heating	
		EWT F	Ft. Head Pressure	EWT F	Ft. Head Pressure
009	1.5	77	5.1	55	5.8
	2.3		9.3		10.6
	2.7		12.4		14.0
012	2.5	77	10.2	55	8.5
	3.1		14.6		16.6
	3.7		19.6		22.0
015	2.3	77	6.2	55	7.4
	3.5		12.3		14.1
	4.2		16.8		18.8
018	2.9	77	2.4	55	3.1
	4.5		4.9		5.9
	5.4		6.6		7.7
024	3.9	77	5.0	55	6.2
	6.0		9.9		11.8
	7.2		13.2		14.5
036	5.9	77	4.9	55	5.5
	9.0		9.8		11.0
	10.8		13.3		14.7

## Water Volume

Table 8 is provided for use in calculating glycol requirements for the unit.

**Table 8: Water volume**

Unit Model GET	Water Side Volume Cubic In.	Water Side Volume Cubic Ft.	Water Side Volume Gallons
009	17.0	0.010	0.074
012	17.0	0.010	0.074
015	36.0	0.021	0.156
018	48.0	0.028	0.208
024	55.0	0.032	0.238
036	71.0	0.041	0.307

## Flow Checks

For the operating temperature drop (heating) and rise (cooling), refer to Table OP1 and OP2 for the proper water temperature change. Depending on the unit size, entering water temperature and water flow rate, the cooling temperature rise is from 8°F-16°F. Based on the same criteria for heating, the temperature drop is from 2°F-13°F.

## Pressure

Using the P/T ports and one 0-60 psi pressure gauge with the P/T port adapter, measure the pressure difference between the water-in and water-out connections. Compare the pressure differential to Table 6 to determine flow.

## Start-up Checklist and Log

Use the form on page 24 to log system and unit temperatures during start-up.

## WARNING

### Live Electrical Components!

**During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.**



# Start-up Checklist and Log

**Installing Contractor:** Use this form to thoroughly check-out the system and units before and during start-up. (This form need not be returned to the factory unless requested during technical service support).

**Job Name:** \_\_\_\_\_  
**Model Number:** \_\_\_\_\_  
**Date:** \_\_\_\_\_  
**Serial Number:** \_\_\_\_\_

In order to minimize troubleshooting and costly system failures, complete the following checks and data entries before the system is put into full operation.

MODE	HEAT	COOL
Entering fluid temperature	<input type="text" value="F"/>	<input type="text" value="F"/>
Leaving fluid temperature	<input type="text" value="F"/>	<input type="text" value="F"/>
Temperature differential	<input type="text" value="F"/>	<input type="text" value="F"/>
Return-air temperature DB/WB	<input type="text" value="F"/>	<input type="text" value="F"/>
Supply-air temperature DB/WB	<input type="text" value="F"/>	<input type="text" value="F"/>
Temperature differential	<input type="text" value="F"/>	<input type="text" value="F"/>
Water coil heat exchanger (Water Pressure IN)	<input type="text" value="F"/>	<input type="text" value="F"/>
Water coil heat exchanger (Water Pressure OUT)	<input type="text" value="PSIG"/>	<input type="text" value="PSIG"/>
Pressure Differential	<input type="text" value="PSIG"/>	<input type="text" value="PSIG"/>
	<input type="text" value="PSIG"/>	<input type="text" value="PSIG"/>
<b>COMPRESSOR</b>		
Amps	<input type="text"/>	<input type="text"/>
Volts	<input type="text"/>	<input type="text"/>
Discharge line temperature (after 10 minutes)	<input type="text" value="F"/>	<input type="text" value="F"/>



# Maintenance

## Preventive Maintenance

Maintenance on the unit is simplified with the following preventive suggestions:

Filter maintenance must be performed to assure proper operation of the equipment. Filters should be inspected at least every three months, and replaced when it is evident they are dirty. Filter sizing includes:

Model GET	Filter Size (nominal)
009, 012	14 x 20 (356 x 508)
015	18 x 20 (457 x 508)
018	18 x 25 (457 x 635)
024, 036	20 x 30 (508 x 762)

## WARNING Hazardous Voltage!

**Disconnect all electric power, including remote disconnects and discharge motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.**

Check the contactors and relays within the control panel at least once a year. It is good practice to check the tightness of the various wiring connections within the control panel.

A strainer (60 mesh or greater) must be used on an open loop system to keep debris from entering the unit heat exchanger and to ensure a clean system.

For units on well water, it is important to check the cleanliness of the water-to-refrigerant heat exchanger. Should it become contaminated with dirt and scaling as a result of bad water, the heat exchanger will have to be back flushed and cleaned with a chemical that will remove the scale. This service

should be performed by an experienced service person.

## WARNING Hazardous Chemicals!

**Coil cleaning agents can be either acidic or highly alkaline. Handle chemical carefully. Proper handling should include goggles or face shield, chemical resistant gloves, boots, apron or suit as required. For personal safety, refer to the cleaning agent manufacturer's Materials Safety Data Sheet and follow all recommended safe handling practices. Failure to follow all safety instructions could result in death or serious injury.**

It should be noted that the water quality should be checked periodically. See Table 9.

**Table 9: Water Quality Table**

Scaling	
Calcium and magnesium (total hardness)	Less than 350 ppm
Corrosion	
pH	7-9.5
Hydrogen Sulfide	Less than 1 ppm
Sulfates	Less than 25 ppm
Chlorides	Less than 125 ppm
Carbon Dioxide	Less than 75 ppm
Total dissolved solids (TDS)	Less than 1000 ppm
Biological Growth	
Iron Bacteria	Low
Erosion	
Suspended Solids	Low



# Warranty Information

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## Warranty Information

### Standard Warranty

The standard water-source heat pump warranty is Trane's parts-only warranty, running 12-months from start-up, not to exceed 18-months from shipment.

### Extended Warranty

The *optional* extended warranty is a second through fifth year warranty. The time starts at the end of standard 1-year coverage through the fifth year.

These extended warranties apply only to new equipment installed in domestic Trane Commercial Systems Group sales territories and must be ordered prior to start-up.

# Troubleshooting

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## **WARNING**

### **Hazardous Service Procedures!**

**The maintenance and troubleshooting procedures recommended in this section of the manual could result in exposure to electrical, mechanical or other potential safety hazards. Always refer to the safety warnings provided throughout this manual concerning these procedures. When possible, disconnect all electrical power including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components per these tasks. Failure to follow all of the recommended safety warnings provided, could result in death or serious injury.**

#### **Preliminary Trouble Inspection**

If operational difficulties are encountered, be sure to perform the preliminary checks before referring to the troubleshooting chart on page 28.

- Verify that the unit is receiving electric supply power.
- Ensure that the fuses in the fused disconnect are intact.

After completing the preliminary checks, inspect the unit for other obvious problems such as leaking connection, broken or disconnected wires, etc. If everything appears to be in order, but the unit still fails to operate properly, refer to the troubleshooting chart on page 28.

#### **General Operation**

The standard model is designed for indoor installation. When the unit is installed in an unconditioned space, the unit may not start in cool weather (approximately 45°F). It may then be necessary to start the unit in the cooling mode for three to five minutes. The unit may then be shut-off (there will be a two minute time-out of the unit), and restarted in the heating mode. The freeze protection thermostat should also be checked as it may be adversely affected by ambient temperature. Like any other type of mechanical equipment, the unit performs best when it is well maintained.

#### **Operation with a Conventional Thermostat**

The unit is equipped with safety controls, including high pressure control, low pressure control and a freeze protection thermostat, set to shut off the compressor under abnormal temperature or pressure conditions. If the safeties shut off the compressor, a lockout relay prevents short cycling from the abnormal condition. When conditions are corrected, the lockout control can be reset by setting the thermostat system switch to OFF wait a few minutes for the system pressure to equalize, and then return to HEAT or COOL. If the condition continues, an authorized service person should check out the unit.



# Troubleshooting Checklist

Problem	Heating	Cooling	Cause	Correction
<b>No response to any thermostat setting</b>	X	X	Main power off	Check fuses
	X	X	Defective control transformer	Replace
	X	X	Broken or loose connection	Repair
	X	X	Defective thermostat	Replace
	X	X	Transformer	Reset Transformer
<b>Unit short cycles</b>	X	X	Thermostat or sensor improperly located	Relocate
	X	X	Defective compressor overload	Replace (if external)
<b>Blower runs, but compressor does not</b>	X	X	Defective compressor contactor	Replace
	X	X	Supply Voltage too low	Correct
	X	X	Defective compressor capacitor	Replace
	X	X	Defective windings	Replace
	X	X	Limit switches open	Check cause/Replace or repair
	X	X	Dirty filter	Replace/clean
	X	X	Blower RPM too low	Correct
<b>Insufficient capacity</b>	X	X	Loss of conditioned air due to leaks in ductwork	Repair leaks
		X	Introduction of excessively hot return-air	Correct
	X		Introduction of excessively cold return-air	Correct
	X	X	Low on refrigerant charge	Locate leak, repair and recharge by weight (not by superheat)
	X	X	Restricted thermal expansion valve	Replace
	X	X	Defective reversing valve	See WSHP-IOM-# for touch test chart
	X	X	Thermostat improperly located	Relocate
	X	X	Unit undersized	Recalculate heat gains/losses
	X	X	Inadequate water flow	Increase GPM
	X	X	Scaling in heat exchanger	Clean or replace
		X	Water too hot	Decrease temperature
	X	Water too cold	Increase temperature	
<b>High pressure switch open</b>		X	Inadequate GPM	Increase water flow to unit
		X	Water too hot	Decrease temperature
	X		Inadequate air flow	Check, clean blower and coil
	X		Dirty filter	Clean/replace
	X	X	Overcharged with refrigerant	Decrease charge
	X	X	Defective pressure switch	Check or replace
<b>High head pressure</b>		X	Trash in heat exchanger	Backflush
		X	Low water flow	Increase GPM
	X	X	Overcharge of refrigerant	Decrease charge
	X	X	Non-condensable in system	Evacuate and recharge by weight
	X	X	Water too hot	Decrease temperature
	X		Dirty filter	Clean / replace
<b>Low suction pressure</b>	X		Inadequate air flow	Check, clean blower and coil
	X	X	Undercharged	Locate leak, repair and recharge
	X	X	Restricted thermal expansion valve	Repair / replace
		X	Inadequate air flow	Check, clean blower and coil
		X	Dirty filter	Clean/replace
	X	Inadequate GPM	Increase GPM	

# Unit Wiring Retrofit Diagram

## 208/230V-50/60 Hz-1PH

**⚠ WARNING** HAZARDOUS VOLTAGE! DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING. FAILURE TO DISCONNECT POWER BEFORE SERVICING CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

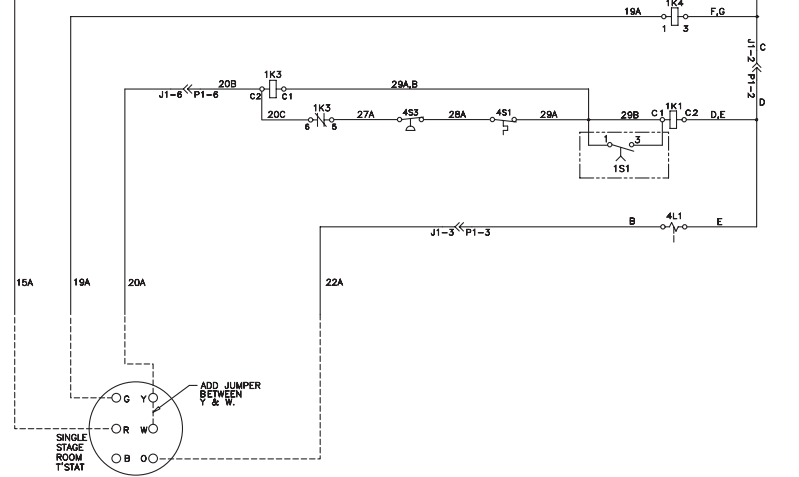
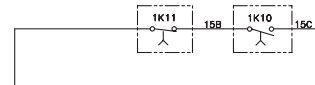
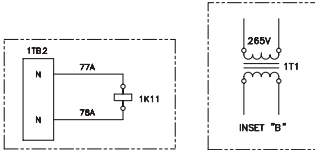
**⚠ AVERTISSEMENT** VOLTAGE HASARDEUX! DECONNECTEZ TOUTES LES SOURCES ELECTRIQUES INCLUANT LES DISJONCTEURS SITES A DISTANCE AVANT D'EFFECTUER L'ENTRETIEN. FAUTE DE DISCONNECTER LA SOURCE ELECTRIQUE AVANT D'EFFECTUER L'ENTRETIEN PEUT EN TRAINER DES BLESSURES CORPORELLES SEVERES OU LA MORT.

**IMPORTANT**  
USE COPPER CONDUCTORS ONLY TO PREVENT EQUIPMENT DAMAGE. UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT ANY OTHER WIRING.

HORIZONTAL DISCHARGE				
SIZE	1F	10A	CAP	
009-013	RED (LO)	BK (HI)	BL (MED)	
019	RED (LO)	BK (HI)	NONE	
026	RED (LO)	BK (HI)	BL (MED)	

TOP DISCHARGE				
SIZE	1F	10A	CAP	
009-013	BK (HI)	RED (LO)	BL (MED)	
019	BK (HI)	RED (LO)	BL (MED)	
026	BL (MED)	RED (LO)	BK	



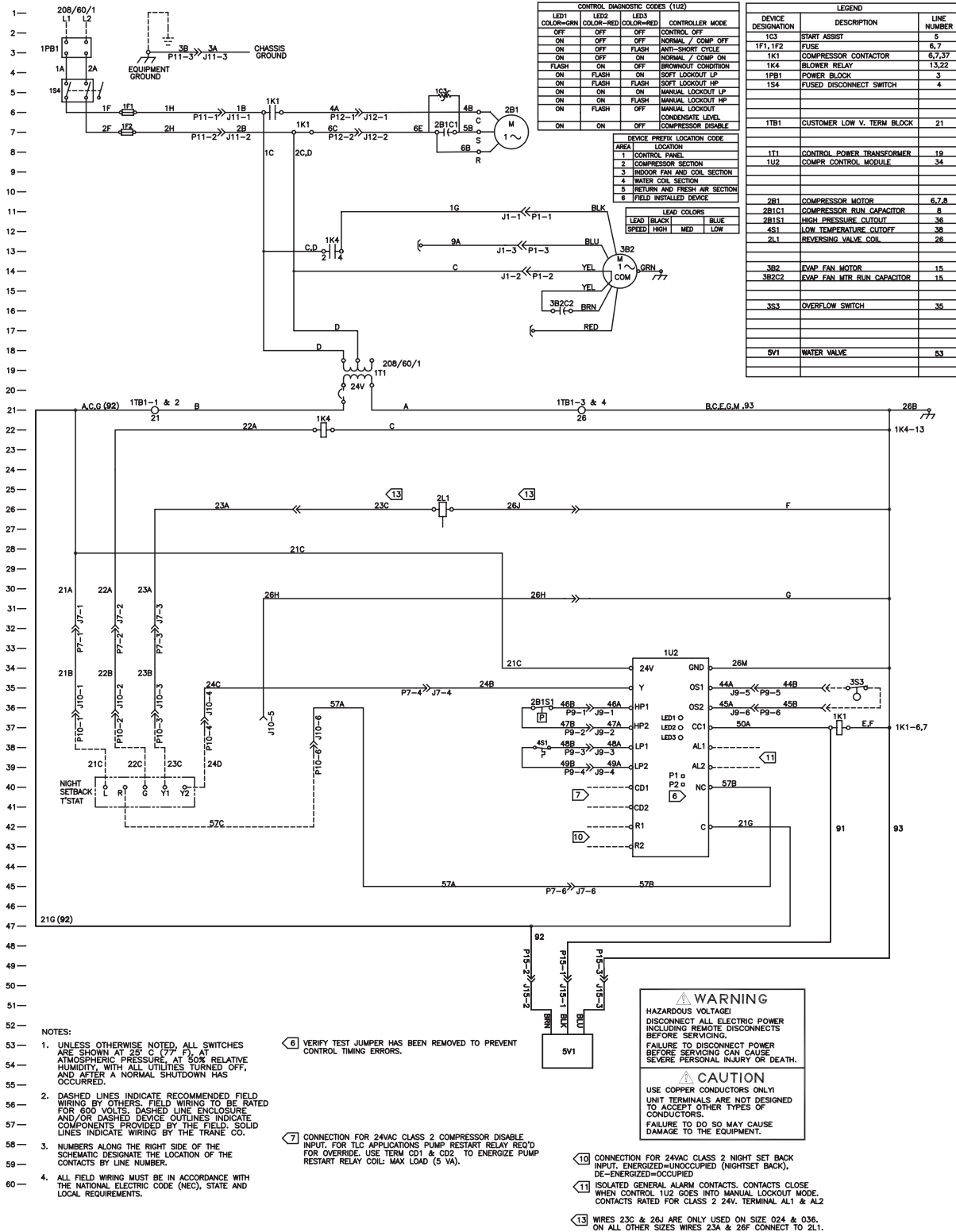
DEVICE PREFIX LOCATION CODE	
AREA	LOCATION
1	CONTROL PANEL
2	COMPRESSOR
3	BLOWER MOTOR
4	UNIT MTD
5	CUSTOMER PROVIDED

LEGEND		
DEVICE DESIGNATION	DESCRIPTION	LINE NUMBER
1FU1	FUSE BLOCK	6,7,8
1K1	COMPRESSOR CONTACTOR	11,13,32
1K3	LOCKOUT RELAY	30,31
1K4	BLOWER MOTOR RELAY	17,27
1K10	RELAY, RANDOM START (OPT)	25,26
1K11	RELAY, NIGHT SETBACK (OPT)	25
1S1	RELAY, TIME DELAY (OPTIONAL)	32
1S2	DISCONNECT SWITCH	3,4,5
1TB2	TERMINAL BOARD	2,19
1T1	TRANSFORMER 24V	23
1PB1	POWER BLOCK	
2B1	COMPRESSOR MOTOR	11
2B1C1	COMPRESSOR CAPACITOR	11
3B1	BLOWER MOTOR	18
3B1C2	BLOWER MOTOR CAPACITOR	17
4L1	REVERSING VALVE	36
4S1	FREEZE PROTECTION SWITCH	31
4S3	HIGH PRESSURE SWITCH	31

- NOTES:**
- UNLESS OTHERWISE NOTED, ALL SWITCHES ARE SHOWN AT 25° C (77° F), AT ATMOSPHERIC PRESSURE, AT 50% RELATIVE HUMIDITY, WITH ALL UTILITIES TURNED OFF, AND AFTER A NORMAL SHUTDOWN HAS OCCURRED.
  - DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. DASHED LINE ENCLOSURES AND/OR DASHED DEVICE OUTLINES INDICATE COMPONENTS PROVIDED BY THE FIELD. PHANTOM LINE ENCLOSURES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTIONS. SOLID LINES INDICATE WIRING BY TRANE CO.
  - NUMBERS ALONG THE RIGHT SIDE OF THE SCHEMATIC DESIGNATE THE LOCATION OF CONTACTS BY LINE NUMBER. AN UNDERLINED NUMBER INDICATES A NORMALLY CLOSED CONTACT. AN AN OPEN ARROWHEAD BELOW THE LINE NUMBER POINTING UPWARD INDICATES A TIMED CONTACT WHICH BEGINS TIMING WHEN ENERGIZED.
- 4 TRANSFORMER SHOWN IS WIRED FOR 230V, RED LEAD IS FOR 208V. SEE INSET "B" FOR 208V TRANSFORMER.
  - 5 208/230 MFR SIZE 009
  - 6 FAN SPEED WIRING
  - 7 OPTIONAL DISCONNECT SWITCH.
  - 8 OPTIONAL DISCONNECT SWITCH AND FUSE BLOCK.

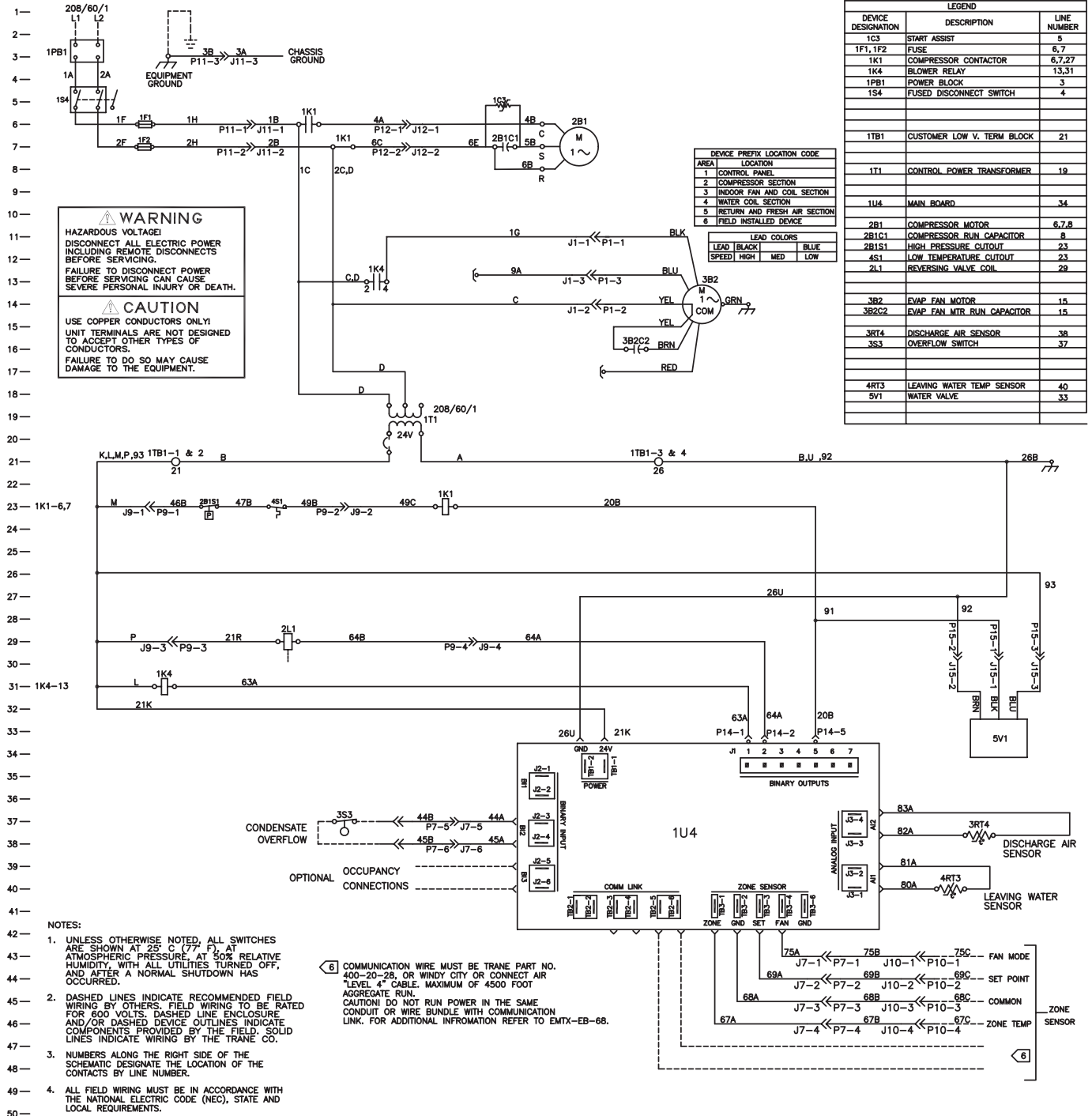
# Unit Wiring Deluxe Diagram

## 208V-50/60 Hz-1PH



# Unit Wiring ZN510 Diagram

## 230V-50/60 Hz-1PH





**TRANE**<sup>®</sup>

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**[www.trane.com](http://www.trane.com)**

For more information, contact your local district office or e-mail us at [comfort@trane.com](mailto:comfort@trane.com)

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Literature Order Number	WSHP-SVN08B-EN
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File Number	SV-UN-WSHP-SVN08B-EN-0206
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Supersedes	SV-UN-WSHP-SVN08A-EN-1105
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Stocking Location	Inland
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Trane has a policy of continuous product and data improvement and reserves the right to change design and specifications without notice.